**I CLAIM:**

1. A method of cutting a strand of steel with a cutting torch, comprising:

commencing a cut at a first side of the strand;

moving the cutting torch along an arcuate path at a variable rate that depends on at least a length of a path through the strand made by a cutting flame of the cutting torch, the arcuate path being of constant radius to continuously aim the cutting flame at a fixed point on the strand; and

following the arcuate path to keep the cutting flame aimed at the fixed point until the steel is cut.

2. The method as claimed in claim 1 wherein moving at the variable rate further comprises moving the cutting torch along the arcuate path at a rate dependent on a location of an edge of a surface of the strand in the path of the cutting flame.

3. The method as claimed in claim 2 further comprising an initial step of securing a cutting apparatus to the strand for the duration of a cut, the securing comprising:

clamping a frame to the strand; and

placing a weighted torch stabilizer onto the strand, the weighted torch stabilizer supporting the cutting torch and a drive system for moving the cutting torch along the arcuate path.

4. The method as claimed in claim 3 wherein placing the weighted torch stabilizer comprises lowering the

weighted torch stabilizer over a top of the strand and permitting a guiding surface of the weighted torch stabilizer to center the weighted torch stabilizer on a top of the strand.

5. The method as claimed in claim 2 further comprising monitoring a travel speed of the strand, and adjusting a cutting cycle period to optimize cutting given a current travel speed.

6. The method as claimed in claim 2 wherein the moving the cutting torch at a variable rate further comprises controlling advancement of the cutting torch along the arcuate path at a variable rate determined by program instructions read by a controller of a servo motor.

7. The method as claimed in claim 2 wherein the moving the cutting torch at a variable rate further comprises tangentially moving an arcuate support of constant radius to which the cutting torch is rigidly connected.

8. The method as claimed in claim 7 wherein tangentially moving comprises controlling output of a servo motor to rotate a pinion that engages a rack on the arcuate support.

9. A method as claimed in claim 8 further comprising a step of circulating water around the servo motor to cool it.

10. An apparatus for cutting a strand of steel to reduce adherence of slag to the cut steel, comprising:

a cutting torch;

a guide system for moving the cutting torch in an arcuate path of constant radius so that a cutting flame of the cutting torch is continuously aimed at a fixed point in relation to the strand; and

a drive system for advancing the cutting torch along the arcuate path at a variable rate that depends on at least a length of a path through the strand made by a cutting flame of the cutting torch.

11. An apparatus as claimed in claim 10 wherein the drive system comprises a controller for controlling a rate of the advance along the arcuate path in dependence on the length of the path of the cutting flame through the strand, and any edge on a surface of the strand in the path of the cutting flame.

12. An apparatus as claimed in claim 11 wherein the controller is an electronic device adapted to store program instructions, and controls the rate of advance of the cutting torch.

13. An apparatus as claimed in claim 12 wherein the electronic device further receives an indicator of a rate of advance of the strand, and optimizes cutting of the strand given available time to complete the cut through the strand.

14. An apparatus as claimed in claim 11 wherein the guide system comprises an arcuate support forming the arcuate path for guiding the cutting torch movement.

15. An apparatus as claimed in claim 14 wherein the guide system further comprises a heat shield for protecting the drive system from heat of the strand and the cutting torch, and splatter of molten material.

16. An apparatus as claimed in claim 15 wherein the drive system comprises a rack mounted on the arcuate support and a pinion driven by a servo comprising a motor, a controller, and a gearbox.

17. An apparatus as claimed in claim 16 wherein the servo further comprises a coolant input duct and a coolant output duct to permit water cooling of the servo.

18. A method of cutting a continuously cast strand of steel with a cutting torch, comprising:

moving the cutting torch along with the continuously cast strand as it advances;

commencing a cut at a first side of the continuously cast strand; and

moving the cutting torch along an arcuate path at a variable rate that depends on at least a length of a path through the strand made by a cutting flame of the cutting torch, the arcuate path being of constant radius to continuously aim the cutting flame at a fixed point on the continuously cast strand until the continuously cast strand is cut.

19. The method as claimed in claim 18 further comprising controlling the variable rate to ensure that the torch is moved more slowly when a corner of the

continuously cast strand is coincident with the arcuate path.

20. The method as claimed in claim 19 further comprising receiving input from sensors to determine a rate of advance of the continuously cast strand, and adjusting the variable rate to ensure that the continuously cast strand is cut before the continuously cast strand has moved a predetermined distance.